REMARKS

This is intended as a full and complete response to the Final Office Action dated December 20, 2005, having a shortened statutory period for response set to expire on March 20, 2006. Claims 1-17 and 20 remain pending in the application and are shown above. Claims 1-17 and 20 stand rejected by the Examiner. Claim 20 is amended to correct informalities. Reconsideration of the rejected claims is requested for reasons presented below.

Response to Arguments

With regard to the Examiner's Response to Applicant's arguments, the Examiner states that the features upon which Applicant relies (*i.e.*, separate cells/chambers for heating and annealing a substrate) are not recited in the rejected claims.

Contrary to the Examiner's statement, Applicant respectfully points out that the features which Applicant has presented in the paper of November 4, 2005 and relies on are recited in the rejected claims. Claim 1 and claims dependent thereon recite, among others, heating a substrate in a cleaning cell and annealing the substrate at an annealing station. Claim 8 and claims dependent thereon recite annealing a substrate in an annealing station and preheating the substrate in a spin rinse dry cell. Accordingly, reconsideration of the arguments presented in the paper filed on November 4, 2005 and allowance of the rejected claims are respectfully requested.

Claim Objections

Claim 20 stands objected due to informalities. Applicant has amended claim 20 to correct informalities. Withdrawal of the objection is respectfully requested.

Claim Rejections – 35 USC § 102

Claims 8, 13, and 14 stand rejected under 35 USC § 102(e) as being anticipated by *Uzoh et al.* (US Patent No. 6,692,588). Applicant respectfully traverses the rejection.

Uzoh et al. discloses using de-oxygenated DI water and a heating lamp to heat a wafer in order to simultaneously clean and anneal the wafer in a cleaning/annealing chamber. (*See*, column 4, lines 1-21.) The de-oxygenated DI water of *Uzoh et al.* can be preheated prior to being delivered into the rinse/anneal chamber or heated by the

heating lamp inside the rinse/anneal chamber for simultaneous cleaning/annealing. (*See*, column 4, lines 1-3 and lines 22-26.) Only the de-oxygenated DI water of *Uzoh et al.* is preheated before applying to the wafer during the rinsing/annealing process inside the rinse/anneal chamber, the wafer/substrate of *Uzoh et al.* is not preheated. Therefore, *Uzoh et al.* does not teach, show or suggest preheating the substrate during the rinsing process as recited in claims 8 and claims dependent thereon.

Since simultaneous cleaning/annealing process of *Uzoh et al.* is in contrast to annealing a substrate at an annealing station subsequent to a separate preheating process, *Uzoh et al.* does not teach, show or suggest annealing a substrate in an annealing station subsequent to preheating the substrate, wherein the preheating is conducted in a separate spin rinse dry cell. Accordingly, *Uzoh et al.* does not teach, show or suggest plating a conductive layer onto a substrate, rinsing the substrate of unwanted residue chemicals, preheating the substrate during the rinsing process, and annealing the substrate at an annealing station subsequent to the preheating process, wherein the preheating are conducted in a spin rinse dry cell, as recited in claim 8 and claims dependent thereon. Withdrawal of this rejection is respectfully requested.

Applicant further traverses the rejection of dependent claims 13-14 on grounds that *Uzoh et al.* does not describe rinsing a substrate, preheating the substrate in a spin rinse dry cell, and annealing the substrate at an annealing station, separate from the spin rinse dry cell. Accordingly, *Uzoh et al.* does not teach, show or suggest rinsing a substrate, preheating the substrate, annealing a substrate at an annealing station subsequent to the preheating process, wherein the preheating is conducted in a spin rinse dry cell and preheating the substrate comprises applying radiant heat to the substrate during the rinsing, as recited in claim 13. In addition, *Uzoh et al.* does not teach, show or suggest rinsing a substrate, preheating the substrate, annealing a substrate at an annealing station subsequent to the preheating process, wherein the preheating is conducted in a spin rinse dry cell, and the rinsing and preheating steps are conducted simultaneously, as recited in claim 14. Therefore, allowance of claims 13-14 is respectfully requested.

Claim Rejections – 35 USC § 103

Claims 1-7 stand rejected under 35 USC § 103(a) as being obvious over *Cheung et al.* (US Patent Application Publication No. 2002/0130046) and *Uzoh et al.* Applicant respectfully traverses the rejection.

Uzoh et al. is discussed above. *Uzoh et al.* does not describe separate cells/chambers for heating and annealing a substrate. *Uzoh et al.* does not teach, show or suggest heating a substrate in a cleaning cell, transferring the substrate from the cleaning cell to an annealing station, and annealing the substrate at the annealing station, as recited in claim 1 and claims dependent thereon.

Cheung et al. discloses a method of forming a copper interconnect and in-situ annealing of a copper layer inside an integrated processing system after the copper layer is deposited by the integrated processing system. *Cheung et al.* does not teach, show or suggest heating a substrate in a cleaning cell, transferring the substrate from the cleaning cell to an annealing station, and annealing the substrate at the annealing station, as recited in claim 1 and claims dependent thereon, and lacking in *Uzoh et al.*

Cheung et al. and *Uzoh et al.*, alone or in combination, do not teach, show, or suggest a method for processing a substrate including plating a conductive layer onto a substrate, transferring the substrate from a plating cell to a cleaning cell, heating the substrate in the cleaning cell, transferring the substrate from the cleaning cell to an annealing station, and annealing the substrate at the annealing station, as recited in claim 1, and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 9-11 stand rejected under 35 USC § 103(a) as being obvious over *Uzoh et al.* and further in view of *Kimura et al.* (US Patent Application Publication No. 2001/0024691). Applicant respectfully traverses the rejection.

Uzoh et al. is discussed above.

Kimura et al. discloses removal of particles by a cleaning unit and/or drying of a substrate by a spin-dry unit after copper plating. (*See*, Paragraph 10.) *Kimura et al.* does not teach, show or suggest preheating a substrate in a spin rinse dry cell and annealing the substrate at an annealing station, as lacking in *Uzoh et al.*

Uzoh et al. in view of *Kimura et al.*, alone or in combination, do not teach, show, or suggest plating a conductive layer onto a substrate, rinsing the substrate of unwanted residue chemicals, preheating the substrate during the rinsing process, and annealing the substrate at an annealing station subsequent to the preheating process, wherein the preheating is conducted in a spin rinse dry cell, as recited in claim 8 and claims 9-11, which depend on claim 8. Withdrawal of the rejection is respectfully requested.

Claim 12 stands rejected under 35 USC § 103(a) as being obvious over *Uzoh et al.* and *Kimura et al.* and further in view of *Cheung et al.* Applicant respectfully traverses the rejection.

Uzoh et al., *Kimura et al.* and *Cheung et al.* have been discussed above.

Applicant further traverses the rejection of claim 12, which depends on claims 8 and 9, on grounds that *Uzoh et al.* and *Kimura et al.* in view of *Cheung et al.*, alone or in combination, do not teach, show or suggest plating a conductive layer onto a substrate, rinsing the substrate of unwanted residue chemicals, preheating the substrate during the rinsing process, and annealing the substrate at an annealing station subsequent to the preheating process, wherein the preheating is conducted in a spin rinse dry cell, as recited in claim 8, and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 15-16 stand rejected under 35 USC § 103(a) as being obvious over *Uzoh et al.* in view of *Ivanov et al.* (US Patent Application Publication No. 2004/0097071). Applicant respectfully traverses the rejection.

Uzoh et al. is discussed above.

Ivanov et al. discloses a method of electroless deposition of thin films by using heating and cooling to control the growth of the deposited films on a substrate in an electroless deposition chamber. *Ivanov et al.* does not describe preheating in a spin rinse dry cell and annealing in an annealing station, as lacking in *Uzoh et al.*

Accordingly, *Uzoh et al.* in view of *Ivanov et al.* does not teach, show or suggest rinsing the substrate of unwanted residue chemicals, preheating the substrate during the rinsing process, and annealing the substrate at an annealing station subsequent to the preheating process, wherein the preheating is conducted in a spin rinse dry cell, as

recited in claim 8 and claims 15-16, which depend on claim 8. Withdrawal of the rejection is respectfully requested.

Claim 17 stands rejected under 35 USC § 103(a) as being obvious over *Lubomirsky et al.* (US Patent Application Publication No. 2003/0131494). Applicant respectfully traverses the rejection.

Lubomirsky et al. discloses a spin rinse dry chamber for a semiconductor processing system. The spin rinse dry chamber of *Lubomirsky et al.* includes a heating element proximate a fluid channel in order to heat a rinsing fluid prior to the rinsing fluid entering a processing region and contacting a substrate. *Lubomirsky et al.* does not describe a radiant heating assembly to provide radiant heat to directly heat the substrate.

Applicant respectfully submits that *Lubomirsky et al.* does not teach, show, or suggest a plating cell positioned on a processing platform and being configured to plate a conductive layer onto the substrate, a rinsing cell positioned on the processing platform, the rinsing cell including a substrate support member configured to support the substrate for processing and a radiant heating assembly connected to the rinsing cell and disposed to provide radiant heat to directly heat the substrate, and a substrate annealing station positioned in communication with the processing platform, as recited in claim 17 and claims dependent thereon. Withdrawal of the rejection is respectfully requested.

Claim 20 stands rejected under 35 USC § 103(a) as being obvious over *Lubomirsky et al.* and *Uzoh et al.*, and further in view of *Narushima* (US Patent No. 6,951,587). Applicant respectfully traverses the rejection.

Lubomirsky et al. and *Uzoh et al.* have been discussed above. *Uzoh et al.* discloses a single cleaning/annealing chamber for simultaneous cleaning/annealing process. *Lubomirsky et al.* and *Uzoh et al.*, alone or in combination, does not discloses an apparatus including a plating cell, a rinsing cell having a radiant heating assembly to provide radiant heat to directly heat a substrate and a substrate annealing station, wherein the radiant heating assembly further includes a temperature monitoring device being configured to monitor the temperature of the substrate and control the application of electrical power to the radiant heating assembly, as recited in claim 20.

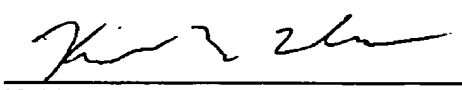
Narushima discloses a ceramic heater of a thermal CVD system. *Narushima* does not teach, show or suggest a rinsing cell having a radiant heating assembly, and it is impossible to combine a ceramic heater of a thermal CVD system as disclosed in *Narushima* with a spin rinse dry cell of a plating cell of *Lubomirsky et al* or a cleaning/annealing chamber of a plating cell of *Uzoh et al.*

Lubomirsky et al. and *Uzoh et al.* in view of *Narushima*, alone or in combination, does not teach, show or suggest a plating cell positioned on a processing platform, the plating cell being configured to plate a conductive layer onto the substrate, a rinsing cell positioned on the processing platform, the rinsing cell comprising a substrate support member configured to support the substrate for processing and a radiant heating assembly connected to the rinsing cell and disposed to provide radiant heat to directly heat the substrate, and a substrate annealing station positioned in communication with the processing platform, wherein the radiant heating assembly further comprises a temperature monitoring device, the temperature monitoring device being configured to monitor the temperature of the substrate and control the application of electrical power to the radiant heating assembly, as recited in claim 20. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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